# **North Dakota Agriculture Processing**

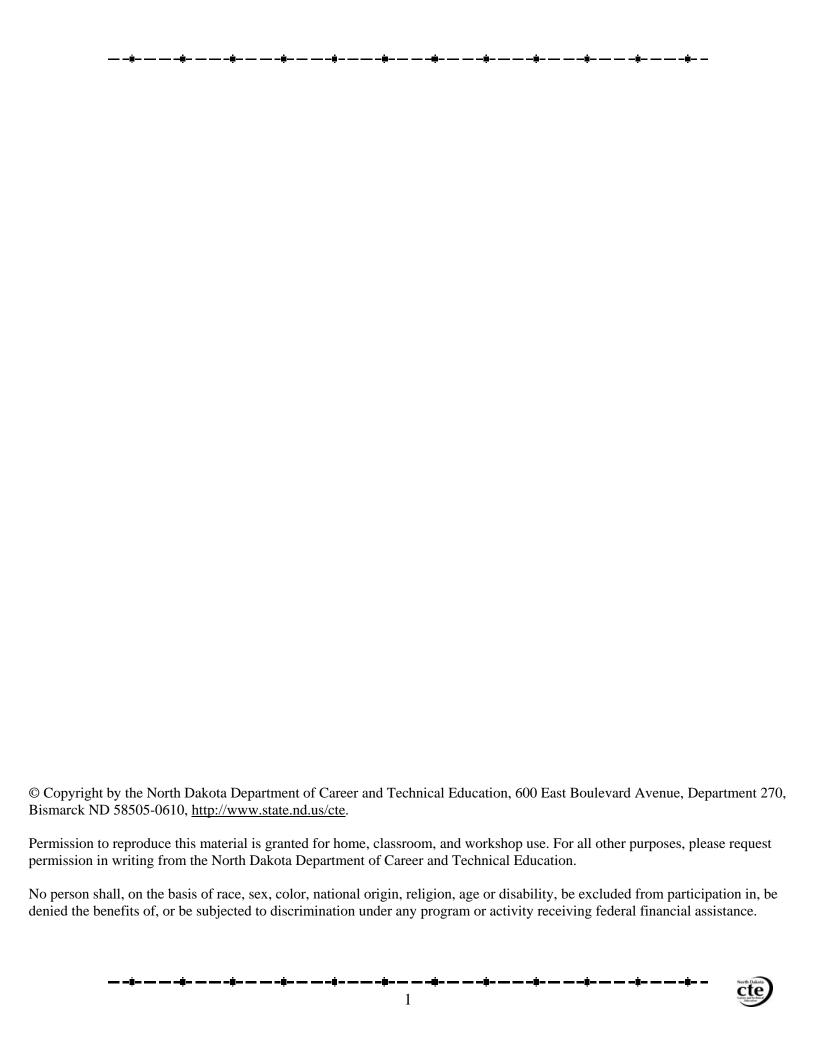
Content Standards – DRAFT

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#### **North Dakota**

### **Agriculture Processing Standards**

#### Introduction

The North Dakota Department of Career and Technical Education is committed to working on standards to ensure that each program area can offer courses that allow students to acquire knowledge and skills. CTE not only provides technical skills and knowledge for students to succeed in careers, but also cross-functional workplace skills such as teamwork, problem solving, and the ability to find and use information, and provides the context in which traditional educational goals and academic skills can be enhanced.

The standards process is one that directly involves the state supervisor(s), the curriculum administrator for this agency, and teachers working directly with the content at hand. Once the standards are written and expectations are clearly defined, the standards are then compared and aligned with national and industry standards.

The Department of Career and Technical Education strongly believes in the importance of academic integration within each program area. The standards produced for each program area will be cross walked with the most current academic drafts of English Language Arts, Mathematics, Science, and Tech Literacy. When possible, standards will be cross walked with other academic areas that correspond.



#### **Definitions**

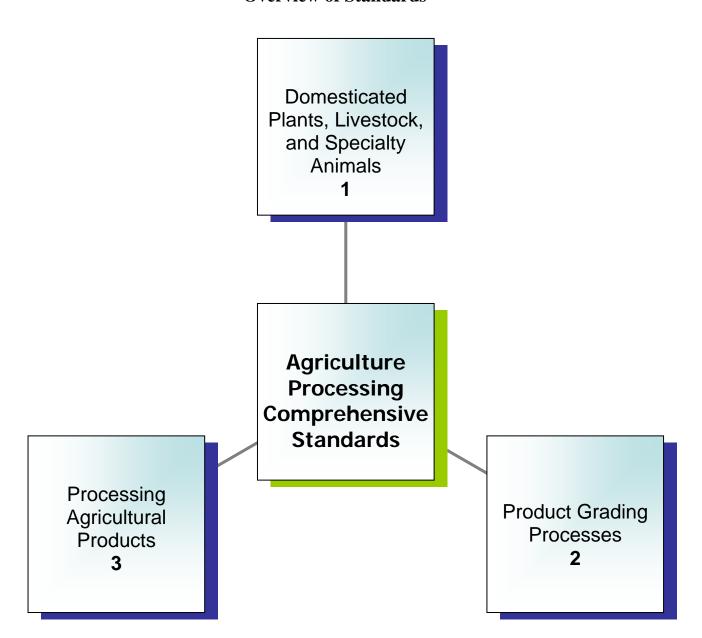
For each standard, there is one or more topic statements along with competencies for each topic. The competencies are categorized into three divisions: Introductory, Core, and Advanced. These divisions can further be defined as:

Introductory:	Knowledge Acquisition—Learners at this level expand awareness and build comprehension of knowledge.
Core:	Application—Learners at this level experience acquired knowledge by applying it to situations and self.
Advanced:	Reflection—Learners at this level analyze, synthesize, judge, assess, and evaluate knowledge in accord with their own goals, values, and beliefs, and/or real situations.





### **Overview of Standards**







### Standards at a Glance

### **COMPREHENSIVE STANDARDS**

# 1.0 DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS

• Understand the uses of domesticated plants, livestock, and specialty animals in society.

### 2.0 PROCESSING AGRICULTURAL PRODUCTS

• Understand safety, processing, servicing, and retail marketing in agriculture.

### 3.0 PRODUCT GRADING PROCESSES

• Understand the grading process of different agricultural products.





### **Standards with Topics**

### **CONTENT STANDARDS**

### 1.0 DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS

- o Understand the uses of domesticated plants, livestock, and specialty animals in society.
  - 1.1 Understand products and by-products of domesticated plants.
  - 1.2 Understand products and by-products of domesticated livestock.
  - 1.3 Understand products and by-products of specialty crops and animals.
  - 1.4 Explore career opportunities in agriculture processing.

### 2.0 PROCESSING AGRICULTURAL PRODUCTS

- o Understand safety, processing, servicing, and retail marketing in agriculture.
  - 2.1 Understand basic processing procedures and methods for animals.
  - 2.2 Understand basic processing procedures and methods for plants and crops.
  - 2.3 Understand packaging and labeling requirements of agricultural products.
  - 2.4 Understand operation, service and maintenance of processing equipment.
  - 2.5 Understand food safety and sanitation standards for processing agriculture products.

### 3.0 PRODUCT GRADING PROCESSES

- o Understand the grading process of different agricultural products.
  - 3.1 Understand USDA grades and grading process for animals, crops, and other agriculture products.







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Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of domesticated plants, livestock, and specialty animals in society.

Topic 1: Understand products and by-products of domesticated plants.

### Student Competencies

### **Introductory**

1.1.1 List commodities produced from ND crops.

#### Core

1.1.2 Identify retail and wholesale products from ND raised plants.

### Advanced

1.1.3 Map the marketing chain of various ND agricultural products, i.e. producer to consumer.

### Keys to Employability

### Basic Skills

- 1. Reading→ Locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- Writing→ Communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- 3. Arithmetic/Mathematics→ Performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- 4. Listening→ Receives, attends to, interprets, and responds to verbal messages and other cues.
- 5. Speaking→ Organizes ideas and communicates orally.

#### Thinking Skills

- 1. Creative Thinking → Generates new ideas.
- 2. Decision Making→ Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
- 3. Problem Solving→ Recognizes problems and devises and implements plan of action.
- 4. Seeing Things in the Mind's Eye→ Organizes, processes symbols, pictures, graphs, objects, and other information.
- Knowing How to Learn → Uses efficient learning techniques to acquire and apply new knowledge and skills.
- 6. Reasoning → Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.



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Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of domesticated plants, livestock, and specialty animals in society.

Topic 2: Understand products and by-products of domesticated livestock.

### Student Competencies

### **Introductory**

1.2.1 List commodities produced from ND livestock.

#### Core

1.2.2 Identify retail and wholesale products from animal agriculture (e.g. beef, dairy, sheep, pork, poultry, etc.).

#### Advanced

1.2.3 Map the marketing chain of various ND agricultural products, i.e. producer to consumer.

### Keys to Employability

### **Personal Qualities**

- 1. Responsibility → Exerts a high level of effort and perseveres towards goal attainment.
- 2. Self-Esteem→ Believes in own self worth and maintains a positive view of self.
- 3. Sociability → Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group setting.
- 4. Self-Management→ Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control.
- Integrity/Honesty→ Chooses ethical courses of action.

#### Resources

- 1. Time→ Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
- 2. Money→ Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives.
- 3. Material and Facilities → Acquires, stores, allocates, and uses materials or space efficiently.
- 4. Human Resources → Assesses skills and distributes work accordingly, evaluates performance and provides feedback.





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Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of domesticated plants, livestock, and specialty animals in society.

Topic 3: Understand products and by-products of specialty crops and animals.

### Student Competencies

### Introductory

1.3.1 List commodities produced from ND specialty plants and animals.

#### Core

1.3.2 Identify ND specialty products and their uses (e.g. honey, hemp, omega flax).

#### Advanced

1.3.3 Map the marketing chain of various ND agricultural products, i.e. producer to consumer.

### Keys to Employability

#### Interpersonal

- Participates as a Member of a Team→ Contributes to group effort.
- Teaches Others New Skills. 2.
- 3. Serves Clients/Customers → Works to satisfy customers' expectations.
- Exercises Leadership 

  Communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
- Negotiates→ Works toward agreements involving exchange of resources; resolves divergent interests.
- Works with Diversity → Works well with men and 6. women from diverse backgrounds.

#### Information

- 1. Acquires and Evaluates Information.
- 2. Organizes and Maintains Information.
- 3. Interprets and Communicates Information.
- 4. Uses Computers to Process Information.



Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of



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domesticated plants, livestock, and specialty animals in society.

Topic 4: Explore career opportunities in agriculture processing.

# Student Competencies

### Introductory

1.4.1 Explore careers available in agricultural processing.

#### Core

- 1.4.2 Link SAE areas to agriculture processing.
- Research professions in the field of agriculture 1.4.3 processing (e.g. interview professionals, skill required).

#### Advanced

Encourage the establishment of SAE's in agriculture 1.4.4 processing.

### Keys to Employability

### Systems

- Understands Systems → Knows how social, organizational, and technological systems work and operates effectively with them.
- Monitors and Corrects Performance→ Distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions.
- Improves or Designs Systems→ Suggests modifications to existing systems and develops new or alternative systems to improve performance.

### **Technology**

- Selects Technology→ Chooses procedures, tools, 1. or equipment including computers and related technologies.
- Applies Technology to Task→ Understands overall intent and proper procedures for setup and operation of equipment.
- Maintains and Troubleshoots Equipment→ Prevents, identifies, or solves problems with equipment, including computers and other technologies.





Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of domesticated plants, livestock, and specialty animals in society.

### Academic Cross Walk

# English Language Arts

9.1.3	Cross-reference information
9.1.5	Organize information from a variety of sources
9.1.7	Identify and avoid plagiarism
10.1.1	Form questions to focus research
10.1.2	Know ways to effectively search electronic databases
10.1.5	Organize information from a variety of sources into a
	unified whole
10.1.7	Paraphrase information
11.1.1	Research topics independently using appropriate
	sources
11.1.2	Evaluate and incorporate information from primary
	sources
11.1.4	Verify the quality, accuracy, and usefulness of
	information
9.3.8	Use supporting details
9.3.10	Edit and revise compositions for proper mechanics and
	grammar, syntax, diction, and order
9.3.11	Arrange paragraphs in a logical progression
9.3.12	Use technology to present written work
10.3.7	Use a variety of supporting details
10.3.10	Use a specific point of view in compositions
11.3.5	Use a variety of supporting details
11.3.8	Incorporate visual aids into written work to enhance
	meaning
12.3.4	Use variety of sources for supporting details
12.3.5	Elaborate ideas through word choice and description
	using grade-level vocabulary
10.5.2	Use media for a variety of purposes

# Library/Technology Literacy

12.1.1	Define a research problem of task
12.1.2	Plan a research strategy
12.1.3	Access information using a variety of sources
12.1.4	Use a variety of criteria to evaluate and select
	information for research
12.1.5	Use organizational strategies to record and
	synthesize information
12.1.6	Present research
12.1.7	Evaluate the research process
12.2.1	Demonstrate awareness of audience when creating
	media products
12.2.2	Synthesize information to create a product that meets
12.2.2	a specific need
12.2.3	Use a variety of criteria to evaluate media products
12.2.4	Use a variety of media and technology to
	communicate with communities beyond the school
12.3.1	Explain and use appropriate terminology and
12.3.1	concepts associated with media and technology
12.3.2	Apply strategies for identifying and solving routine
12.3.2	hardware and software problems
12.3.3	Explain features and uses of current and emerging
12.0.0	media and technology
12.3.4	Explain ways in which social and economic forces
	influence which technologies will be developed and
	used
12.4.1	Work cooperatively and collaboratively when using
	media and technology
12.4.2	Develop competence and selectivity in reading,
	listening, and viewing
12.4.3	Demonstrate self-motivation in seeking information
12.4.4	Use a variety of media and technology for personal
	needs and enjoyment
12.5.1	Follow school policies for responsible use of
	information resources
12.5.2	Demonstrate proper form of citations and
	bibliographies
12.5.3	Understand and obey intellectual property laws,
	including copyright, when using information in any
	format
12.5.4	Understand the impact of equitable access to
	information in a democracy
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Standard 1: DOMESTICATED PLANTS, LIVESTOCK, AND SPECIALTY ANIMALS – Understand the uses of domesticated plants, livestock, and specialty animals in society.

### Academic Cross Walk

# Mathematics

# Science

None listed.	9-10.1.1	Understand the interaction of components within a
	9-10.1.4	system Know how classification can be based on the
	9-10.1.6	relationship between form and function Explain how models can be used to illustrate
		scientific principles
	11-12.1.1	Understand the structure, organization, and dynamics of components within a system
	9-10.2.7	Analyze data found in tables, charts, and graphs to
	9-10.8.3	formulate conclusions Understand the role of scientists in theoretical and
	7 10.0.3	applied science





Topic 1: Understand basic processing procedures and methods for animals.

### Student Competencies

### **Introductory**

- 2.1.1 Distinguish the procedures of animal processing.
- 2.1.2 Explain the safe handling of meat and dairy products.
- 2.1.3 Label skeletal and muscular anatomy of carcasses.

#### Core

- 2.1.4 List steps for fabrication of meat animals. (e.g. beef, pork, lamb or deer carcass).
- 2.1.5 Identify retail cuts of meat products by species.
- 2.1.6 Identify retail dairy products.
- 2.1.7 Calculate meat formulation problems.

#### Advanced

- 2.1.8 Fabricate meat animal carcasses into wholesale retail cuts and processed products (e.g. beef, pork, lamb or deer carcass).
- 2.1.9 Fabricate a processed dairy product (e.g. butter, yogurt, cheese, etc.).

### Keys to Employability

### Basic Skills

- 1. Reading→ Locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- Writing→ Communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- 3. Arithmetic/Mathematics→ Performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- 4. Listening→ Receives, attends to, interprets, and responds to verbal messages and other cues.
- 5. Speaking→ Organizes ideas and communicates orally.

### **Thinking Skills**

- 1. Creative Thinking→ Generates new ideas.
- 2. Decision Making→ Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
- 3. Problem Solving→ Recognizes problems and devises and implements plan of action.
- 4. Seeing Things in the Mind's Eye→ Organizes, processes symbols, pictures, graphs, objects, and other information.
- Knowing How to Learn → Uses efficient learning techniques to acquire and apply new knowledge and skills.
- 6. Reasoning→ Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.





Topic 2: Understand basic processing procedures and methods for plants and crops.

### Student Competencies

### <u>Introductory</u>

2.2.1 Distinguish the procedures of plant product processing.

#### Core

2.2.2 Describe the processing of grain, honey, fruit, vegetables and other specialty plants/crops in ND.

#### Advanced

2.2.3 Describe the blending process to meet industry requirement standards.

### Keys to Employability

### **Personal Qualities**

- 1. Responsibility → Exerts a high level of effort and perseveres towards goal attainment.
- 2. Self-Esteem→ Believes in own self worth and maintains a positive view of self.
- 3. Sociability → Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group setting.
- 4. Self-Management→ Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control.
- Integrity/Honesty → Chooses ethical courses of action.

Standard 2: PROCESSING AGRICULTURAL PRODUCTS – Understand safety, processing, servicing, and retail marketing in agriculture.

Topic 3: Understand packaging and labeling requirements of agricultural products.

### Student Competencies

### **Introductory**

2.3.1 List the basic components of a food label. (e.g. ingredients, nutrition, serving size, etc.).

#### Core

- 2.3.2 Design a food product label.
- 2.3.3 Calculate grading problems for animals and crops.
- 2.3.4 Determine retail pricing.

#### Advanced

- 2.3.5 Develop a nutrition label. (e.g. calculate nutrition levels, serving size, etc.).
- 2.3.6 Design a marketing package.

### Keys to Employability

#### Resources

- Time→ Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
- 2. Money→ Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives.
- 3. Material and Facilities → Acquires, stores, allocates, and uses materials or space efficiently.
- 4. Human Resources → Assesses skills and distributes work accordingly, evaluates performance and provides feedback.





Topic 4: Understand operation, service and maintenance of processing equipment.

### Student Competencies

### **Introductory**

2.4.1 Identify processing equipment.

### Core

2.4.2 Exhibit safe operation, sanitation and maintenance, of food processing equipment.

### Advanced

2.4.3 Display skills necessary to assemble, disassemble, and maintain processing equipment.

### Keys to Employability

#### Interpersonal

- 1. Participates as a Member of a Team→ Contributes to group effort.
- 2. Teaches Others New Skills.
- 3. Serves Clients/Customers → Works to satisfy customers' expectations.
- Exercises Leadership→ Communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
- 5. Negotiates → Works toward agreements involving exchange of resources; resolves divergent interests.
- 6. Works with Diversity → Works well with men and women from diverse backgrounds.

### **Information**

- 1. Acquires and Evaluates Information.
- 2. Organizes and Maintains Information.
- 3. Interprets and Communicates Information.
- 4. Uses Computers to Process Information.





Topic 5: Understand food safety and sanitation standards for processing agriculture products.

### Student Competencies

### Introductory

- 2.5.1 Understand the importance of sanitation and food safety in processing agricultural products.
- 2.5.2 Identify food safety rules and regulations (e.g. HACCP, FDA, USDA, etc.).

#### Core

- 2.5.3 List time and temperature standards for safe storage of products.
- 2.5.4 Identify sanitation products used in cleaning processing equipment.
- 2.5.5 List requirements for bacterial growth and how to prevent it.

### Advanced

2.5.6 Describe the effects of sugar, yeast, cultures, pH, etc. on food products.

### Keys to Employability

### **Systems**

- 1. Understands Systems → Knows how social, organizational, and technological systems work and operates effectively with them.
- 2. Monitors and Corrects Performance→
  Distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions.
- 3. Improves or Designs Systems → Suggests modifications to existing systems and develops new or alternative systems to improve performance.

### **Technology**

- 1. Selects Technology → Chooses procedures, tools, or equipment including computers and related technologies.
- 2. Applies Technology to Task→ Understands overall intent and proper procedures for setup and operation of equipment.
- 3. Maintains and Troubleshoots Equipment→
  Prevents, identifies, or solves problems with
  equipment, including computers and other
  technologies.





# Academic Cross Walk

# English Language Arts

9.1.1	Choose a broad topic, state the problem, or question
9.1.3	Cross-reference information
9.1.4	Evaluate relevancy of information
9.1.5	Organize information from a variety of sources
9.1.6	Summarize information
9.1.7	Identify and avoid plagiarism
9.1.9	Use graphic organizer
10.1.1	Form questions to focus research
10.1.2	Know ways to effectively search electronic databases
10.1.3	Gather reliable information to support a thesis
10.1.4	Use relevant information
10.1.5	Organize information from a variety of sources into a
	unified whole
10.1.7	Paraphrase information
10.1.10	Write a research paper
10.1.11	Present research information
11.1.1	Research topics independently using appropriate
	sources
11.1.2	Evaluate and incorporate information from primary
	sources
11.1.4	Verify the quality, accuracy, and usefulness of
	information
11.1.5	Synthesize information in a logical sequence
12.1.1	Plan a research strategy
12.1.3	Develop a research question
12.1.4	Defend research paper or project
9.2.6	Demonstrate oral reading fluency
9.2.7	Access prior knowledge to interpret meaning
9.2.12	Explain ways in which the setting affects the
	development of a story
10.2.7	Apply universal themes to real life situations
11.2.6	Apply prior knowledge of content to interpret meaning
1000	of text
12.2.8	Use technical language/jargon to decipher meaning
9.3.3	Develop a composition detailing an opinion
9.3.5	Organize the ideas and details of a composition
0.2.0	according to purpose
9.3.8	Use supporting details
9.3.11	Arrange paragraphs in a logical progression
9.3.12	Use technology to present written work
10.3.2	Defend a personal opinion using facts as support
10.3.4	Organize the ideas and details of a composition
10.2.7	according to purpose
10.3.7	Use a variety of supporting details
10.3.10	Use a specific point of view in compositions

# English Language Arts (cont.)

11.3.2	Organize the ideas and details of a composition
	according to purpose
11.3.3	Elaborate ideas through word choice and description
	using grade-level vocabulary
11.3.5	Use a variety of supporting details
11.3.8	Incorporate visual aids into written work to enhance
	meaning
12.3.4	Use variety of sources for supporting details
12.3.5	Elaborate ideas through word choice and description
	using grade-level vocabulary
9.6.3	Use conventions of punctuation
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### Academic Cross Walk

# Library/Technology Literacy

12.1.1	Define a research problem or task
12.1.2	Plan a research strategy
12.1.3	Access information using a variety of sources
12.1.4	Use a variety of criteria to evaluate and select
	information for research
12.1.5	Use organizational strategies to record and synthesize
	information
12.1.6	Present research
12.1.7	Evaluate the research process.
12.2.1	Demonstrate awareness of audience when creating
	media products
12.2.2	Synthesize information to create a product that meets a
	specific need
12.2.3	Use a variety of criteria to evaluate media products
12.2.4	Use a variety of media and technology to communicate
	with communities beyond the school
12.3.1	Explain and use appropriate terminology and concepts
	associated with media and technology
12.3.2	Apply strategies for identifying and solving routine
	hardware and software problems
12.3.3	Explain features and uses of current and emerging
	media and technology
12.3.4	Explain ways in which social and economic forces
	influence which technologies will be developed and
	used
12.4.1	Work cooperatively and collaboratively when using
10.10	media and technology
12.4.2	Develop competence and selectivity in reading,
10.40	listening, and viewing
12.4.3	Demonstrate self-motivation in seeking information
12.4.4	Use a variety of media and technology for personal
10.7.1	needs and enjoyment
12.5.1	Follow school policies for responsible use of
10.70	information resources
12.5.2	Demonstrate proper form of citations and bibliographies
12.5.3	Understand and obey intellectual property laws,
	including copyright, when using information in any
10 5 4	format
12.5.4	Understand the impact of equitable access to
	information in a democracy

# Mathematics

9-10.1.1	Express numbers between one-billionth and one
	billion in fraction, decimal, and verbal form;
	express numbers of all magnitudes in scientific
	notation
9-10.1.8	Apply estimation skills to predict realistic
	solutions to problems
9-10.1.9	Select and use a computational technique to solve
	problems involving real numbers
9-10.1.10	Explain the reasonableness of a problem's solution
	and the process used to obtain it
11-12.1.7	Add, subtract, and multiply complex numbers
9-10.3.1	Construct appropriate displays of given data
9-10.3.2	Interpret a given visual representation of a set of
	data
9-10.3.6	Calculate probabilities of compound events using
	addition and multiplication rules
11-12.3.1	Choose, construct, and interpret a display to
	represent a set of data
9-10.4.1	Select appropriate units and scales for problem
	situations involving measurement
9-10.4.3	Use approximations to compare the standard and
	metric systems of measurement
9-10.4.4	Given a conversion factor, convert between
	standard and metric measurements
9-10.4.5	Use methods necessary to achieve a specified
	degree of precision and accuracy in measurement
0.10.4.6	situations
9-10.4.6	Employ estimation techniques to evaluate
	reasonableness of results in measurement
9-10.5.4	situations
9-10.5.4	Perform the operations of addition, subtraction,
9-10.5.10	multiplication, and division on algebraic functions
9-10.5.10	Solve a literal equation for a specified variable
9-10.3.11	Use essential quantitative relationships in a
	situation to determine whether the relationship can be modeled by a linear function
9-10.5.14	Draw conclusions about a situation being modeled
7-10.3.14	Draw conclusions about a situation being modeled
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# Academic Cross Walk

# Science

11-12.1.1	Understand the structure, organization, and
	dynamics of components within a system
9-10.2.2	Identify questions and concepts that guide scientific
	Investigations
9-10.2.3	Formulate a testable hypothesis for a simple investigation
0.10.2.5	
9-10.2.5	Design and conduct a guided investigation
9-10.2.6	Maintain clear and accurate records of scientific Investigations
9-10.2.7	Analyze data found in tables, charts, and graphs to
7 10.2.7	formulate conclusions
11-12.2.1	Use appropriate safety equipment and precautions
	during investigations
11-12.2.2	Select and use appropriate instruments, measuring
	tools, and units of measure to improve scientific
	investigations
11-12.2.3	Use data from scientific investigations in order to
	accept or reject a hypothesis
11-12.2.4	Formulate and revise explanations based upon
	scientific knowledge and experimental data
11-12.2.7	Design and conduct an independent investigation
11-12.2.5	Use technology and mathematics to improve
	investigations and communications
11-12.2.8	Communicate and defend a scientific argument
11-12.3.12	Understand the relationship between thermal
	energy, temperature, and the motion of particles
11-12.3.14	Understand how energy is related to physical
	changes of matter
9-10.4.2	Relate the functions of cells in multicellular
	organisms to their cell type
9-10.4.3	Know the relationship between protein structure
	and function
9-10.7.1	Understand how personal health is related to
	fitness, substance abuse, sexual activity, and
	nutrition
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Standard 3: PRODUCT GRADING PROCESSES – Understand the grading process of different agricultural products.

Topic 1: Understand USDA grades and grading process for animals, crops, and other agriculture products.

### Student Competencies

#### Introductory

3.1.1 List USDA Grades of various agricultural products (e.g. meat, dairy, eggs, grain etc.).

### Core

- 3.1.2 Determine USDA grades for agricultural products.
- 3.1.3 Understand quality grading processes.

### Advanced

- 3.1.4 Affect of feeding programs on quality grades of livestock carcasses.
- 3.1.5 Understand the Total Quality Management (TQM) program.

### Keys to Employability

### Basic Skills

- 1. Reading→ Locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- Writing→ Communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- 3. Arithmetic/Mathematics→ Performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- 4. Listening→ Receives, attends to, interprets, and responds to verbal messages and other cues.
- Speaking→ Organizes ideas and communicates orally.

### Thinking Skills

- 1. Creative Thinking→ Generates new ideas.
- 2. Decision Making→ Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
- 3. Problem Solving→ Recognizes problems and devises and implements plan of action.
- 4. Seeing Things in the Mind's Eye→ Organizes, processes symbols, pictures, graphs, objects, and other information.
- Knowing How to Learn → Uses efficient learning techniques to acquire and apply new knowledge and skills.
- 6. Reasoning→ Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

#### Information

- 1. Acquires and Evaluates Information.
- 2. Organizes and Maintains Information.
- 3. Interprets and Communicates Information.
- 4. Uses Computers to Process Information.









Standard 3: PRODUCT GRADING PROCESSES – Understand the grading process of different agricultural products.

# Academic Cross Walk

# English Language Arts

9.1.1	Choose a broad topic, state the problem, or question
9.1.3	Cross-reference information
9.1.4	Evaluate relevancy of information
9.1.5	Organize information from a variety of sources
9.1.6	Summarize information
9.1.7	Identify and avoid plagiarism
9.1.9	Use graphic organizer
10.1.1	Form questions to focus research
10.1.2	Know ways to effectively search electronic databases
10.1.3	Gather reliable information to support a thesis
10.1.4	Use relevant information
10.1.5	Organize information from a variety of sources into a
	unified whole
10.1.7	Paraphrase information
10.1.10	Write a research paper
10.1.11	Present research information
11.1.1	Research topics independently using appropriate
	sources
11.1.2	Evaluate and incorporate information from primary
	sources
11.1.4	Verify the quality, accuracy, and usefulness of
	information
11.1.5	Synthesize information in a logical sequence
12.1.3	Develop a research question
12.1.1	Plan a research strategy
12.1.4	Defend research paper or project
9.2.6	Demonstrate oral reading fluency
9.2.7	Access prior knowledge to interpret meaning
9.2.12	Explain ways in which the setting affects the
	development of a story
10.2.7	Apply universal themes to real life situations
11.2.6	Apply prior knowledge of content to interpret meaning
1220	of text
12.2.8	Use technical language/jargon to decipher meaning
9.3.3	Develop a composition detailing an opinion
9.3.5	Organize the ideas and details of a composition
0.2.0	according to purpose
9.3.8	Use supporting details
9.3.11	Arrange paragraphs in a logical progression
9.3.12	Use technology to present written work
10.3.2	Defend a personal opinion using facts as support
10.3.4	Organize the ideas and details of a composition
10 2 7	according to purpose
10.3.7	Use a variety of supporting details
10.3.10	Use a specific point of view in compositions

# English Language Arts (cont.)

11.3.2	Organize the ideas and details of a composition
	according to purpose
11.3.3	Elaborate ideas through word choice and description
	using grade-level vocabulary
11.3.5	Use a variety of supporting details
11.3.8	Incorporate visual aids into written work to enhance
	meaning
12.3.4	Use variety of sources for supporting details
12.3.5	Elaborate ideas through word choice and description
	using grade-level vocabulary
9.6.3	Use conventions of punctuation
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Standard 3: PRODUCT GRADING PROCESSES – Understand the grading process of different agricultural products.

### Academic Cross Walk

# Library/Technology Literacy

#### 12.1.1 Define a research problem or task 12.1.4 Use a variety of criteria to evaluate and select information for research 12.1.5 Use organizational strategies to record and synthesize information 12.1.6 Present research 12.1.7 Evaluate the research process Work cooperatively and collaboratively when using 12.4.1 media and technology 12.4.2 Develop competence and selectivity in reading, listening, and viewing 12.4.3 Demonstrate self-motivation in seeking information 12.5.1 Follow school policies for responsible use of information resources 12.5.2 Demonstrate proper form of citations and bibliographies 12.5.3 Understand and obey intellectual property laws, including copyright, when using information in any 12.5.4 Understand the impact of equitable access to information in a democracy

### **Mathematics**

9-10.1.1	Express numbers between one-billionth and one
	billion in fraction, decimal, and verbal form;
	express numbers of all magnitudes in scientific
	notation
9-10.1.8	Apply estimation skills to predict realistic
	solutions to problems
9-10.1.9	Select and use a computational technique to solve
	problems involving real numbers
9-10.1.10	Explain the reasonableness of a problem's solution
	and the process used to obtain it
11-12.1.7	Add, subtract, and multiply complex numbers
9-10.3.1	Construct appropriate displays of given data
9-10.3.2	Interpret a given visual representation of a set of
	data
9-10.3.6	Calculate probabilities of compound events using
	addition and multiplication rules
11-12.3.1	Choose, construct, and interpret a display to
	represent a set of data
9-10.4.1	Select appropriate units and scales for problem
	situations involving measurement
9-10.4.3	Use approximations to compare the standard and
	metric systems of measurement
9-10.4.4	Given a conversion factor, convert between
	standard and metric measurements
9-10.4.5	Use methods necessary to achieve a specified
	degree of precision and accuracy in measurement
	situations
9-10.4.6	Employ estimation techniques to evaluate
	reasonableness of results in measurement
	situations
9-10.5.4	Perform the operations of addition, subtraction,
	multiplication, and division on algebraic functions
9-10.5.10	Solve a literal equation for a specified variable
9-10.5.11	Use essential quantitative relationships in a
	situation to determine whether the relationship can
	be modeled by a linear function
9-10.5.14	Draw conclusions about a situation being modeled





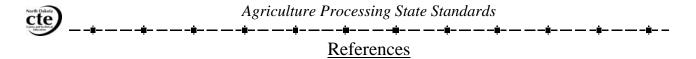
Standard 3: PRODUCT GRADING PROCESSES – Understand the grading process of different agricultural products.

# Academic Cross Walk

# Science

9-10.1.1	Understand the interaction of components within a
	system
9-10.1.4	Know how classification can be based on the
	relationship between form and function
9-10.1.6	Explain how models can be used to illustrate
	scientific principles
11-12.1.4	Know how classification can be based on the
	relationship between form and function
9-10.2.1	Use appropriate safety equipment and precautions
	during investigations
9-10.2.5	Use technology and mathematics to improve
	investigations and communications
11-12.2.1	Use appropriate safety equipment and precautions
	during investigations
11-12.2.2	Select and use appropriate instruments, measuring
	tools, and units of measure to improve scientific
	investigations
11-12.2.5	Use technology and mathematics to improve
	investigations and communications
11-12.2.7	Design and conduct an independent investigation





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